Date of Issue:
26 March 2015

# SAFETY DATA SHEET

## 1. Substance and Source Identification

**Product Identifier**

**SRM Number:** 1514
**SRM Name:** Thermal Analysis Purity Set
**SRM Parts:** Phenacetin
Nominal 0.7 mole % *p*-Aminobenzoic Acid in Phenacetin
Nominal 2.0 mole % *p*-Aminobenzoic Acid in Phenacetin
Nominal 5.0 mole % *p*-Aminobenzoic Acid in Phenacetin
**Other Means of Identification:** Not applicable.

**Recommended Use of This Material and Restrictions of Use**

This Standard Reference Material (SRM) is intended for use in evaluating methods of determining purity by differential scanning calorimetry. A unit of SRM 1514 consists of a set of four vials each containing approximately 0.5 g of material. One vial contains "pure" phenacetin and each additional vial contains phenacetin doped with *p*-aminobenzoic acid at a given mole percent, see Certificate of Analysis.

**Company Information**

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## 2. Hazards Identification

**Classification**

| | | |
|---|---|---|
| **Physical Hazard:** | Not classified. | |
| **Health Hazard:** | Acute Toxicity, Oral | Category 4 |
| | Carcinogenicity | Category 1A |

**Label Elements**

**Symbol:**

**Signal Word:** DANGER

**Hazard Statement(s):**

| | |
|---|---|
| H302 | Harmful if swallowed. |
| H350 | May cause cancer. |

**Precautionary Statement(s):**

| | |
|---|---|
| P201 | Obtain special instructions before use. |
| P202 | Do not handle until all safety precautions have been read and understood. |
| P264 | Wash hands thoroughly after handling. |
| P270 | Do not eat, drink or smoke when using this product. |
| P280 | Wear eye protection, protective gloves and clothing. |
| P301 + P312 | If swallowed: Call a doctor if you feel unwell. |
| P330 | Rinse mouth. |

P308 + P313 If exposed of concerned: Get medical attention.

P405 Store locked up.

P501 Dispose of contents and container according to local regulations.

**Hazards Not Otherwise Classified:** Not applicable.

**Ingredients(s) with Unknown Acute Toxicity:** Not applicable.

## 3. COMPOSITION AND INFORMATION ON HAZARDOUS INGREDIENTS

**Substance:** Phenacetin and phenacetin doped with *p*-aminobenzoic acid

**Other Designations:**

Phenacetin (acetophenetidin; sinutab; *n*-(4-ethoxyphenyl) acetamide)
*p*-Aminobenzoic acid (4-aminobenzoic acid; paraminol, pabamine; PABA; vitamin BX; amben)

**NOTE:** Components are listed in compliance with OSHA's 29 CFR 1910.1200. For actual values, see the NIST Certificate of Analysis.

| Hazardous Component(s) | CAS Number | EC Number (EINECS) | Nominal Mass Concentration (%) |
|---|---|---|---|
| Phenacetin | 62-44-2 | 200-533-0 | ≥95 |
| *p*-Aminobenzoic acid | 150-13-0 | 205-753-0 | ≤5 |

## 4. FIRST AID MEASURES

**Description of First Aid Measures:**

**Inhalation:** If adverse effects occur, remove to uncontaminated area. If not breathing, give artificial respiration or oxygen by qualified personnel. Seek immediate medical attention.

**Skin Contact:** Wash skin with soap and water for at least 15 minutes. If necessary, seek medical attention.

**Eye Contact:** Flush eyes with water for at least 15 minutes. If necessary, seek medical attention.

**Ingestion:** If a large amount is swallowed, seek medical attention.

**Most Important Symptoms/Effects, Acute and Delayed:** Blood damage, cancer hazard (in humans).

**Indication of any immediate medical attention and special treatment needed, if necessary:** If any of the above symptoms are present, seek medical attention if needed.

## 5. FIRE FIGHTING MEASURES

**Fire and Explosion Hazards:** Negligible fire hazard. See Section 9, "Physical and Chemical Properties" for flammability properties.

**Extinguishing Media:**

Suitable: Regular dry chemical, carbon dioxide, water, regular foam.
Unsuitable: Not applicable.

**Specific Hazards Arising from the Chemical:** None listed.

**Special Protective Equipment and Precautions for Fire-Fighters:** Avoid inhalation of material or combustion byproducts. Wear full protective clothing and NIOSH approved self-contained breathing apparatus (SCBA).

**NFPA Ratings** (0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe)

Health = 1 Fire = 0 Reactivity = 0

## 6. ACCIDENTAL RELEASE MEASURES

**Personal Precautions, Protective Equipment and Emergency Procedures:** Keep unnecessary personnel away. Use suitable protective equipment; see Section 8, "Exposure Controls and Personal Protection".

**Methods and Materials for Containment and Clean up:** Notify safety personnel of spills. Collect spilled material in appropriate container for disposal. Isolate hazard area and deny entry. Subject to California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65). Keep out of water supplies and sewers.

## 7. HANDLING AND STORAGE

**Safe Handling Precautions:** See Section 8, "Exposure Controls and Personal Protection".

**Storage:** Store and handle in accordance with all current regulations and standards. Keep separated from incompatible substances (see Section 10, "Stability and Reactivity").

## 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

**Exposure Limits:** This material is a particulate matter and adequate inhalation/respiratory protection should be used to minimize exposure. No occupational exposure limits have been established for phenacetin or *p*-aminobenzoic acid. The exposure limits for Particulates Not Otherwise Regulated are applicable.

OSHA (PEL): 15 mg/m$^3$ (TWA, total particulates not otherwise regulated)
5 mg/m$^3$ (TWA, respirable particulates not otherwise regulated)

**Engineering Controls:** Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

**Personal Protection:** In accordance with OSHA 29 CFR 1910.132, subpart I, wear appropriate Personal Protective Equipment (PPE) to minimize exposure to this material.

**Respiratory Protection:** If workplace conditions warrant a respirator, a respiratory protection program that meets OSHA 29CFR 1910.134 must be followed. Refer to NIOSH 42 CFR 84 for applicable certified respirators.

**Eye/Face Protection:** Wear chemical resistant safety goggles. An eyewash station should be readily available near areas of use.

**Skin and Body Protection:** Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Chemical-resistant gloves should be worn at all times when handling chemicals.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

| **Descriptive Properties** | **Phenacetin (≥95 % of this SRM)** | ***p*-Aminobenzoic acid (≤5 % of this SRM)** |
|---|---|---|
| **Appearance (physical state, color, etc.)** | colorless solid | colorless to yellow solid |
| **Molecular Formula** | $C_{10}H_{13}NO_2$ | $H_2NC_6H_4COOH$ |
| **Molar Mass (g/mol)** | 179.24 | 137.14 |
| **Odor** | odorless | odorless |
| **Odor Threshold** | not available | not available |
| **pH** | not available | 3.5 at 0.5 % |
| **Evaporation Rate** | not available | (negligible, butyl acetate = 1) |
| **Melting Point/Freezing Point** | 134 ºC (273.2 ºF) | 187 ºC to 189 ºC (368.6 ºF to 372.2 ºF) |
| **Relative Density** as specific gravity (water = 1) | not available | 1.374 |
| **Vapor Pressure** | not available | not available |
| **Vapor Density (air = 1)** | not available | not available |
| **Viscosity** | not available | not available |
| **Solubility(ies)** | slightly soluble in water; soluble in alcohol, ether, chloroform, and pyrimidines. | soluble in ethanol, ether, acetic acid, ethyl acetate, alkali hydroxide solutions, and carbonate solutions; insoluble in petroleum ether |
| **Partition Coefficient (n-octanol/water)** | not available | not available |
| **Thermal Stability Properties** | | |
| **Autoignition Temperature** | not available | not available |
| **Thermal Decomposition** | not available | not available |
| **Initial Boiling Point and Boiling Range** | decomposes | not available |
| **Explosive Limits, LEL** | not available | not available |
| **Explosive Limits, UEL** | not available | not available |
| **Flash Point** | not available | >93.3 °C (>199.94 ºF) |
| **Flammability (solid, gas)** | not available | not available |

## 10. STABILITY AND REACTIVITY

**Reactivity:** Stable at normal temperatures and pressure.

**Stability:** X Stable _____ Unstable

**Possible Hazardous Reactions:** No data available.

**Conditions to Avoid:** Avoid heat, flames, sparks and other sources of ignition. Avoid contact with incompatible materials.

**Incompatible Materials:** Oxidizing materials.

**Fire/Explosion Information:** See Section 5, "Fire Fighting Measures".

**Hazardous Decomposition:** Oxides of carbon, nitrogen.

**Hazardous Polymerization:** _____ Will Occur X Will Not Occur

## 11. TOXICOLOGICAL INFORMATION

**Route of Exposure:** _____ Inhalation _____ Skin X Ingestion

**Symptoms Related to the Physical, Chemical and Toxicological Characteristics:** Blood damage, cancer hazard (in humans).

**Potential Health Effects (Acute, Chronic and Delayed):**

**Inhalation:** Exposure may result in irritation.

**Skin Contact:** Exposure may result in irritation and allergic photosensitization with skin eruptions.

**Eye Contact:** Contact with may cause eye irritation.

**Ingestion:** The symptoms resulting from the ingestion of this material vary depending on the dosage and duration of use. Symptoms may include nausea, vomiting, hemolytic anemia, acidosis, arrhythmias, and cardiac arrest. Carcinoma of the renal pelvis and bladder has been reported to increase after chronic ingestion of phenacetin.

**Numerical Measures of Toxicity:**

**Acute Toxicity:** Category 4, Oral.
Phenacetin: Rat, Oral LD50: 1650 mg/kg
*p*-Aminobenzoic acid: Rat, Oral LD50: 6 g/kg

**Skin Corrosion/Irritation:** Not classified.
*p*-Aminobenzoic acid: Human, skin 10 %; Human skin 5 % (negligible)

**Serious Eye Damage/Eye Irritation:** Not classified; no data available.

**Respiratory Sensitization:** Not classified; no data available.

**Skin Sensitization:** Not classified; no data available.

**Germ Cell Mutagenicity:** Not classified; no data available.

**Carcinogenicity:** Category 1B

**Listed as a Carcinogen/Potential Carcinogen** X Yes _____ No

Phenacetin is listed by NTP as reasonably anticipated to be a human carcinogen and IARC as Group 1 (carcinogenic to humans); it is not listed by OSHA.
*p*-Aminobenzoic acid is listed by IARC as Group 3 (not classifiable); it is not listed by NTP or OSHA.

**Reproductive Toxicity:** Not classified
*p*-Aminobenzoic acid: Rat, Oral TDLo: 2500 mg/kg (pregnant 122 d)
Phenacetin: Rat, Oral TDLo: 57200 mg/kg (20 week)

**Specific Target Organ Toxicity, Single Exposure:** Not classified; no data available.

**Specific Target Organ Toxicity, Repeated Exposure:** Not classified; no data available.

**Aspiration Hazard:** Not applicable.

## 12. ECOLOGICAL INFORMATION

**Ecotoxicity Data:** No ecotoxicity data available.

**Persistence and Degradability:** No data available.

**Bioaccumulative Potential:** No data available.

**Mobility in Soil:** No data available.

**Other Adverse effects:** No data available.

## 13. DISPOSAL CONSIDERATIONS

**Waste Disposal:** Dispose of waste in accordance with all applicable federal, state, and local regulations. Phenacetin U. S. EPA 40 CFR 262 Hazardous Waste Number(s): U187.

## 14. TRANSPORTATION INFORMATION

**U.S. DOT and IATA:** Not regulated by DOT or IATA.

## 15. REGULATORY INFORMATION

**U.S. Regulations:**

CERCLA Sections 102a/103 (40 CFR 302.4): Phenacetin, 100 lb (45.4 kg) final RQ.

SARA Title III Section 302 (40 CFR 355.30): Not regulated.

SARA Title III Section 304 (40 CFR 355.40): Not regulated.

SARA Title III Section 313 (40 CFR 372.65): Not regulated.

OSHA Process Safety (29 CFR 1910.119): Not regulated.

SARA Title III Sections 311/312 Hazardous Categories (40 CFR 370.21):

| | |
|---|---|
| ACUTE HEALTH: | Yes. |
| CHRONIC HEALTH: | Yes. |
| FIRE: | No. |
| REACTIVE: | No. |
| PRESSURE: | No. |

**State Regulations:**

California Proposition 65:

WARNING! This product contains a chemical (phenacetin) known to the state of California to cause cancer.

**U.S. TSCA Inventory:** Phenacetin and *p*-aminobenzoic acid are listed.

**TSCA 12(b), Export Notification:** Section 5, 0.1 % de minimis concentration for phenacetin.

**Canadian Regulations:**

WHMIS Information: Not provided for this material.

## 16. OTHER INFORMATION

**Issue Date:** 26 March 2015

**Sources:** ChemAdvisor, Inc., SDS *Phenacetin*, 15 December 2014.

ChemAdvisor, Inc., SDS *p-Aminobenzoic Acid*, 15 December 2014.

CDC; NIOSH; *NIOSH Pocket Guide to Chemical Hazards*; Department of Health and Human Services (DHHS), Centers for Disease Control and Prevention (CDC), National Institute for Safety and Health; *Particulates not otherwise regulated*, 04 April 2011; available at http://www.cdc.gov/niosh/npg/npgd0480.html (accessed Mar 2015).

Hazardous Substances Data Bank (HSDB), National Library of Medicine's TOXNET system, *p-Aminobenzoic Acid CAS No. 150-13-0*; available at http://toxnet.nlm.nih.gov (accessed Mar 2015).

International Agency for Research on Cancer (IARC); *Phenacetin CAS No. 62-44-2*; available at http://monographs.iarc.fr/ENG/Monographs/vol100A/mono100A-25.pdf (accessed Mar 2015).

**Key of Acronyms:**

| | | | |
|---|---|---|---|
| ACGIH | American Conference of Governmental Industrial Hygienists | NTP | National Toxicology Program |
| CAS | Chemical Abstracts Service | OSHA | Occupational Safety and Health Administration |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act | PEL | Permissible Exposure Limit |
| CFR | Code of Federal Regulations | RCRA | Resource Conservation and Recovery Act |
| DOT | Department of Transportation | REL | Recommended Exposure Limit |
| EINECS | European Inventory of Existing Commercial Chemical Substances | RQ | Reportable Quantity |
| EPCRA | Emergency Planning and Community Right-to-Know Act | RTECS | Registry of Toxic Effects of Chemical Substances |
| IARC | International Agency for Research on Cancer | SARA | Superfund Amendments and Reauthorization Act |
| IATA | International Air Transportation Agency | SCBA | Self-Contained Breathing Apparatus |
| IDLH | Immediately Dangerous to Life and Health | SRM | Standard Reference Material |
| LC50 | Lethal Concentration | STEL | Short Term Exposure Limit |
| LD50 | Median Lethal Dose or Lethal Dose, 50 % | STOT | Specific Target Organ Toxicity |
| LEL | Lower Explosive Limit | TLV | Threshold Limit Value |
| MSDS | Material Safety Data Sheet | TPQ | Threshold Planning Quantity |
| NFPA | National Fire Protection Association | TSCA | Toxic Substances Control Act |
| NIOSH | National Institute for Occupational Safety and Health | TWA | Time Weighted Average |
| NIST | National Institute of Standards and Technology | UEL | Upper Explosive Limit |
| n.o.s. | Not Otherwise Specified | WHMIS | Workplace Hazardous Materials Information System |

**Disclaimer:** Physical and chemical data contained in this SDS are provided only for use in assessing the hazardous nature of the material. The SDS was prepared carefully, using current references; however, NIST does not certify the data in the SDS. The certified values for this material are given in the NIST Certificate of Analysis.

Users of this SRM should ensure that the SDS in their possession is current. This can be accomplished by contacting the SRM Program: telephone (301) 975-2200; fax (301) 948-3730; e-mail srmmsds@nist.gov; or via the Internet at http://www.nist.gov/srm.